LONG ISLAND BOTANICAL SOCIETY NEWSLETTER

Vol. 6, No. 1 Jan. - Feb. 1996

Sexual Reproduction in Lemna perpusilla Torr.

On 12 June 1974, Mr. Joseph Beitel discovered plants of *Lemna perpusilla* Torr. (minute duckweed) germinating from seeds in a small kettlehole pond off Kirkup Lane on the northwest side of Laurel Lake near Mattituck, Long Island, New York. Since *Lemna* spp. normally reproduce asexually by production and abscission of additional "leaves" (or thalluses) and sexual reproduction had rarely been observed, a small sample of germinating material was collected in a 5% formalin solution (from 37% stock). Mr. Beitel entrusted me with the collection since he was shortly returning to school.

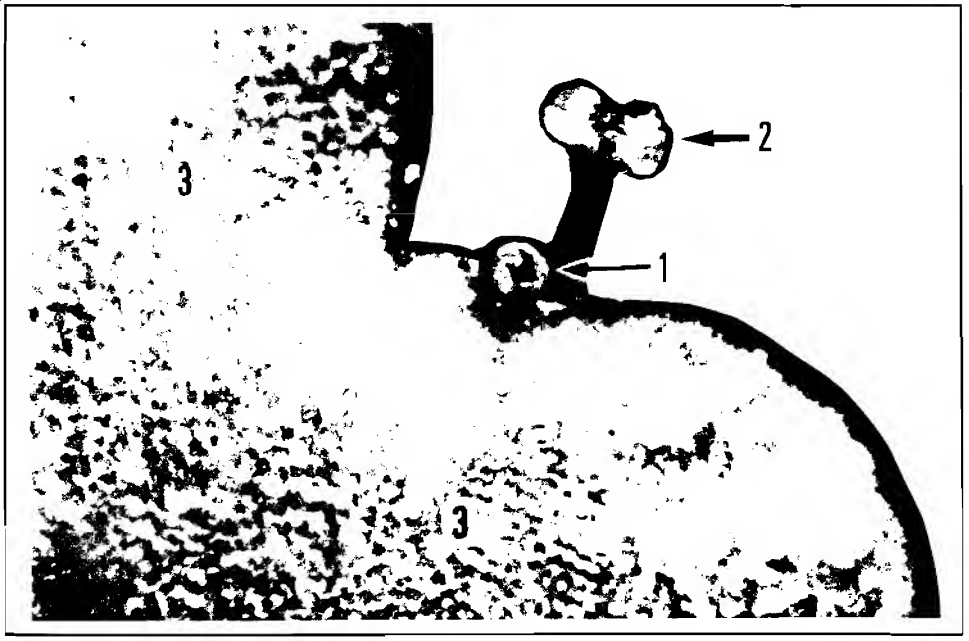
On 16 June 1974, I collected large quantities of material at the same site near Laurel Lake. This material was placed in a ten gallon aquarium about a quarter full of water and stirred. When detritus had settled to the bottom of the aquarium, the seeds, which float, germinating plants and young plants were funneled into four pint jars of 5% formalin solution (*Bookout No. 227*).

Subsequently, when he was a student with Dr. Wagner in Michigan, Mr. Beitel requested some of this preserved material, which I sent him. I never throw anything away, but I have been unable to locate this correspondence. I shipped the material to Mr. Beitel boxed, I believe, and in a zip-lock bag several years at least after the time the material was collected.

On 21 September 1995, I collected a small sample of *Lemna perpusilla* from a kettlehole pond east of Ships Drive, Southold, L. I., New York. When examined at home, the little plants were found to be in bloom.

Dr. Steven Clemants has observed, "Unfortunately, most species of Lemnaceae in our area rarely flower (less than 6% of the specimens collected in the wild have flowers or fruits. In our area only *Lemna perpusilla* is commonly found flowering..." (Long Island Botanical Society Newsletter, 1995, Vol. 5, p. 22).

On 27 September 1995, Mr. Michael Tuminello collected and delivered to me approximately one quart of material from the same kettlehole pond where plants had been obtained on September 21. The plants were still in bloom. A quantity of material collected approximately two weeks later in early October were also blooming. This species clearly does not have its period of anthesis confined to "summer" as stated by M. L. Fernald (1950) in Gray's Manual of Botany, 8th edition. That evening Dr. Eric Lamont and I examined the plants and identified them as *Lemna perpusilla*, which is listed as a rare plant in New York by Mitchell (1986, Checklist of New York



Photograph through microscope, by H. Bookout, of *Lemna perpusilla* magnified 50 times (see text).
1. Female flower; 2. Male flower; 3. Thallus (= leaf, also called frond).

Highlights

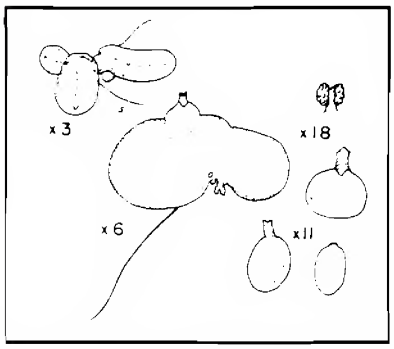
Lemna, continued from page 1

State Plants) and Young (1992, New York State Rare Plant Status List); apparently, the Southold site supports the only extant population of this rare species in New York.

Approximately only one-tenth or fewer of the plants were actually in bloom. Most of the flowers consisted of single stamens in various stages of maturity. Next most common were plants that had both a stamen and a pistil (see photograph on page 1). Very few plants had only a pistil or a pistil with two stamens.

Dr. Lamont and I wondered if the extended drought that lasted virtually the entire month of August and had only recently ended with rain a few days before September 27 had provided the injury necessary to prompt the plant to switch over to sexual reproduction which, in shuffling the genetic deck, might produce a few strains of plants more resistant to desiccation. (A Japanese magnolia, which usually blooms in April, had been noted in full bloom on Middle Road in Riverhead the same week). Unfortunately, for this hypothesis, I never checked to see whether *Lemna* was blooming in September during the intervening twenty-one years between Mr. Beitel's and my discovery in 1974 and now in 1995.

The germinating seeds of specimens collected by Mr. Beitel and myself in June 1974 were recently located and photographed after lying on a shelf for twenty-one years.



Lemna perpusilla, from Radford (1964)

These are not reduced "autumnal fronds in the form of minute bulblets, which sink to the bottom of the water, but rise and vegetate in spring" as stated by Fernald (1950), because the plant is clearly seen to be emerging from an operculate seed coat. The fruit (a utricle), containing 1-7 seeds, was not observed in the 1974 preserved material; the utricle's delicate, bladdery structure apparently did not survive in the preservative. However, what is presumed to be the fruit, whitish in color, was observed emerging from the reproductive pouch in the fresh material collected in 1995. The fruit is said to be "large" (Fernald, 1950) because it is comparable in size to an emerging asexually produced frond.

Photographs were made with a monocular microscope by means of a Leitz micro-ibso device which permits accurate focusing and contains a 1/3x reduction lens to prevent empty magnification when the 24 by 36mm negative frame is enlarged to print size. The 1/3 reduction of the 35x resulting magnification of the microscope becomes a 11.7:1 reproduction ratio of magnification on the 35mm negative or about 50x (49.4x) when enlarged to the size of one of the accompanying 4x6 prints (103 x 152mm). Kodak T-Max film, ASA 100 was exposed for three seconds after a series of trial exposures had been made. The film was developed in D-76 for 9 minutes at 68 degrees F. Although not every precaution of archival processing was used, the film was fixed in two separate, previously unused solutions of fixer and thoroughly washed after treatment in hypo clearing agent.

Flowering material from 1995 has been collected and preserved, and will be made available for study on request.

Henry Bookout
167 Sound Avenue, Riverhead, N.Y. 11901

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Roy Latham: The Legacy Continues

In February, 1995, I received a letter from Dr. Eric Lamont regarding the description of an Ascomycete (*Gloniopsis lathami* Fairman) in Burnham and Latham's flora of the Town of Southold; apparently, Dr. Fairman had described a new species of a mushroom honoring Roy Latham. Previously, only four organisms were reported to have been named in honor of Latham (Lamont, 1994), they are: *Eucosma lathami* (a tortricid moth), *Lecanora caesiorubella* subsp. *lathamii* (a crustose corticolous lichen), *Lydella lathami* (a tachinid fly), and *Trachurus lathami* (a rough scad fish). Now the search for epithets focused on Latham's fungus collections.

The reader may recall that last year I submitted an article about the Long Island mushroom collections of Roy Latham (Biechele, 1994). In that article I mentioned that Latham had sent specimens to Professor John Dearness (1852-1954) in Ontario, Canada for determination. And, it is in the Agricultural herbarium in Ottawa (DAOM) where three fungal species having epithets honoring Latham were recently located by Dr. Amy Rossman, Director, U.S. National Fungus Collections in Beltsville, Maryland (Rossman, in a letter, 15 February 1995.)!

Latham, continued from page 2

Two of these collections represent the asexual stage of a fungus, they are: *Gloeosporium lathami* Dearn. (=*Sporonema lathami* (Dearn.) Arx) (Arx, 1970) and *Leptothyrella lathami* Dearn. (Dearness, 1924). *Gloeosporium lathami* was first collected on the leaves of *Quercus stellata* (post oak) at Orient, New York in September, 1917. Likewise, *L. lathami* was also first collected at Orient on decorticated *Robinia pseudo-acacia* (black locust) in February, 1923.

The third species, *Haplosporella lathami* Dearn. was collected on the dead twigs of *Myrica pensylvanica* (bayberry) at Mattituck, New York in January, 1924 (Dearness, 1924). This Ascomycete is sometimes known as *Apolosporella*, a genus which was later established by Zogg (1962).

This brings us back to Eric's initial inquiry regarding *Gloniopsis lathami* . The only monographic account of the order Hysterales (Zogg, 1962) listed this species as a synonym for *Gloniopsis praelonga* (Schwein.) Zogg, but this evaluation was based on the description rather than an examination of the type specimen. Since the whereabouts of the type specimen is unknown, *G. lathami* cannot at this time be considered a valid species, but Dr. Rossman has suggested that the type specimen may be located at NY (New York Botanical Garden) or CUP (Cornell University, Plant Pathology Department).

I am grateful to Dr. Lamont for encouraging me to search for these additional records of fungi collected by Roy Latham. I am especially indebted to Dr. Rossman for researching all of this newly discovered information.

Literature Cited

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Lance Biechele
Princess Anne, MD
(formally from Southold, Long Island)

The Alligator Bonnet Plant

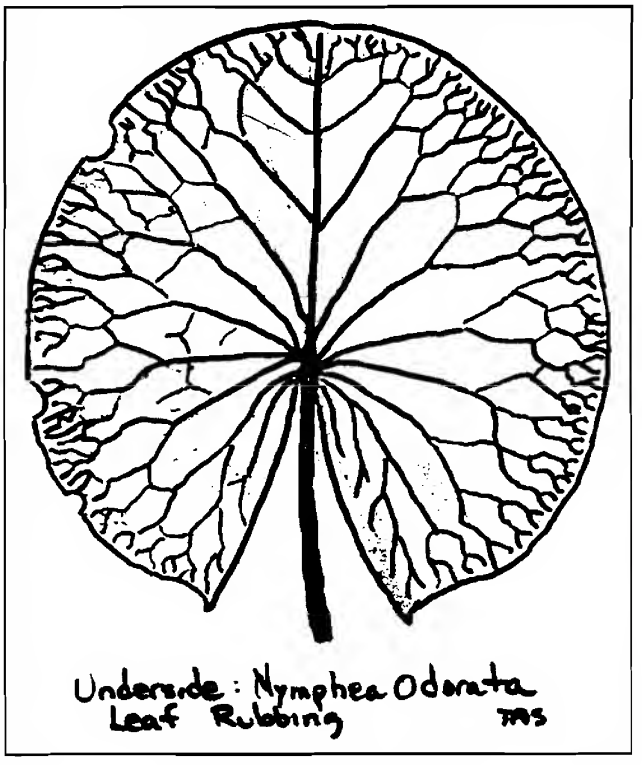
It's not in the lily family even though it's called a lily. Its flower closes by midday. It can have a petiole up to fifteen feet long! It has stomates only on the upper surface of the leaf. Its leaves "are one of the most populous microhabitats." (Eastman, Swamp and Bog; Stackpole Books)

Nymphaea odorata. The Ojibwa Indians cooked the flower buds of white water lily. The dried seeds were also ground into flour. The tubers were cooked and used as a potato substitute.

Well known artist John Singer Sargent painted prominant Bostonian Harriet Hemenway holding a white water lily blossom around the turn of the century. Holding or wearing a water lily flower was "a semiotic allusion to what was known then as a "delicate condition," something regarded as a very delicate matter by most women..." (Smithsonian Mag., July 1994). She helped found the Massachusetts Audubon Society. She was considered rather liberal in her day.

The white water lily was an emblem of purity to Henry David Thoreau. In his Journal of 20 June 1853, he drew this contrast:

> "Found two lilies open in the very shallow inlet of the meadow. How admirable its purity! How innocently sweet its fragrance! How significant that the rich, black mud of our dead stream produces the water lily,



Nymphaea, continued from page 3

out of that fertile slime springs this spotless purity! It is remarkable that those flowers which are emblematical of purity should grow in the mud."

This botanical rags-to-riches concept is typical of the kind of shocking writing style that Thoreau relished. Just as Harriet Hemenway shocked society with her announcement, Thoreau reminds us that such beauty is born of methane-laced mud.

Nymphaea is at once both a launching pad and landing field for ecology. I've seen dragonflies, damselflies, flies, and beetles make temporary stops while languishing in my canoe on Peconic Lake. So too green frogs, tiny plant lice, springtails, leaf hoppers, the pad is a miniature Kennedy Airport.

I held a pad and turned it over to have a look. On its red underside, I found globs of jelly-like egg masses of snails. There were planaria (a flatworm), and red water mites.

The pads are rather rubbery. This texture minimizes tattering during torrential downpours when the force of large water drops could rip the leaf tissue. The vein pattern underneath is a marvelous lesson in plumbing. The petiole is hollow all the way from leaf to rhizome allowing a circulation of air into anerobic mud.

From my canoe, I leaned into the water with a mask and snorkel to get a better look at the world below. Tiny fish lurked under the parasol-like leaves. A damselfly nymph crawled up a petiole, followed by the nymph of a dragonfly. I discovered a huge six inch long jelly-like wad attached to one petiole. It turned out to be a bryozoan colony - related to the corals. A diving beetle with a bubble of air had its head buried in a petiole. It must have chewed its way in. It was "taking on air" from the vessles carrying oxygen rich air to the rhizomes below.

The flower has a beauty that far surpasses anything I've seen in nature. Arising from four sepals, they are a burst of the purest, whitest petals - dazzling in the morning sunlight. Bumblebees like to fly in, arrested by their sweet fragrance. They roll around in the yolk-yellow clump of anthers literally bathing in the pollen. Overhead, a goldfinch chirps bye, while a tree swallow darts past. An occasional fish flap breaks the silence.

A glimpse of the whole pond is like looking up on a starry night. The perfection of the flower is counterbalanced by the blemishes I find on nearly all the leaves. Insect larve, long-horned leaf beetles, and others make serpentine, round or cookie cutter incisions on the succulent tissue. When I finally did find a perfect leaf, it was red on top instead of green; probably it had just emerged. In fact, ecologically, these plants are called emergents. Their pancake leaves and flower gems rise each summer from the thick organic muck and silt on the bottom of shallow ponds.

After a Nature Conservancy walk with Will Griffith in the Grace Estate on 30 June 1989, I wrote in my journal...

"We walked to Scoy's Pond and viewed it from a ramshackle duck blind. The surface of the pond is covered with white scented water lily. Through binoculars I look at the flowers. They are closed. It is hot. Suddenly a kingbird snaps up an insect and lands on an overhanging snag. Dragonflies crochet the air just above the pads, landing, then taking off. Mosquitos close in. The first "slap" breaks the mood and we stir, depart."

Imagine yourself an alligator rising slowly from the bottom of a pool full of white water lily. As you pop to the surface, your head is bedecked with its leaves. Hence the common name, Alligator Bonnet.

Thomas Allen Stock, Smithtown

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Elections

LIBS officers were elected at the November meeting. The following officers will serve for a two year term:

President	Eric Lamont
Vice President	Skip Blanchard
Treasurer	Carol Johnston
Recording Secretary	Barbara Conolly
Corresponding Secretary	Jane Blanchard

Treasurer's Report
1995

Opening Balance (1 Jan. 1995)	4,765.71
Income Total	2,387.81
Expenses Total	1,076.07
Net Gain	1,311.74
Liabilities (outstanding bills)	- 0 -
Closing Balance (1 Dec. 1995)	$6,077.45

Respectfully submitted: **Carol Johnston**
Treasurer

Society News

November & December Meetings

Bob Laskowski reported the destruction of the healthy populations of the rare Yellow Milkwort (*Polygala lutea*) and Pixie Moss (*Pyxidanthera barbulata*) occurring on private property in Islip. The remaining single population of Pixie has been recently declining in numbers, as also the two remaining populations of Yellow Milkwort. All in attendance were very saddened with the news.

Ray Welch reported individuals collecting clubmosses (*Lycopodium*) from Muttontown Preserve before the holidays; he confronted the collectors and they took "only a little." **Skip Blanchard** announced that he and his students recently located another population of the Giant Hogweed (*Heracleum mantegazzianum*) at Muttontown Preserve.

Donald House reported a population of the Downy Rattlesnake Plantain (*Goodyera pubescens*) from Smithtown. The last report of this orchid from Smithtown was in 1920, where it was collected by **William Ferguson**.

In November, **Steve Clemants** attended a DEC meeting in Albany that addressed the problems associated with the State recommending non-native trees and shrubs for landscape plantings. Discussion included alternative native species to replace Japanese Black Pine, Rugose Rose, Russian Olive, etc.

The fourth biannual **New York Natural History Conference** will be held at the State Museum in Albany on April 24-27, 1996. The conference serves to highlight critical research needs, fosters connections among colleagues, and rekindles interests in natural history. For more information, please call 518-474-5812.

New Members

The Long Island Botanical Society is pleased to welcome the following new members:

John Finkenberg, Babylon; **Fern Guttman**, Smithtown Library; **Lili Ann Motta**, East Marion; **Ed & Charlotte Newstead**, Essex Falls, NJ; **Joy Ribisi**, Kings Park; **William Standaert**, Midland Park, NJ; **Mary Stoddard**, Copiague.

LIBS: 10 Years Old

It was during the winter of 1986 that the first discussions took place on the need for Long Island's botanists to meet and share interests and concerns. Consequently, a group of botanists and naturalists met at the Museum of Long Island Natural Sciences (Stony Brook University) on 1 May 1986; the objectives of the meeting were to 1) meet socially and become acquainted and reacquainted, 2) discuss and decide upon the need to meet as a formal, organized botanical club, 3) take steps in chartering such a club, and 4) organize some summer field trips.

Monthly meetings and field trips ensued and by September, 1986, the group unofficially identified themselves as the Long Island Botanical Society. **Bob Zaremba** served as the Society's first President, **Joe Beitel** served as Vice-President, and **Margaret Conover** as Treasurer.

It seems appropriate at this time, our 10th anniversary, to acknowledge the founding members of LIBS who worked to formally organize the society and define its purpose and goals.

Founding Members:

Joseph Beitel, Jane Blanchard, Skip Blanchard, Karen Blumer, David Brandenburg, Barbara Conolly, Margaret Conover, Steven Englebright, Louise Harrison, Jane Hoar, Carol Johnston, Eric Lamont, Mary Laura Lamont, Robert Laskowski, Betty Lotowycz, Travis MacClendon, Chris Mangels, Vincent Puglisi, Glenn Richard, James Romansky, Steven Jay Sanford, Paul Stoutenburgh, Rosalie Talbert, James Thomson, John Turner, Perry Welch, Ray Welch, Robert Zaremba, and Kim Zarillo.

Exhibit: L.I. Maps

Several LIBS members have commented on the excellent exhibit in Cold Spring Harbor entitled, "Long Island Maps and their Makers," presented by the Society for Preservation of Long Island Antiquities. Historical and obscure place names are especially of interest to botanists in their study of plant distributions. For information please call SPLIA at 516-367-6295.

LONG ISLAND BOTANICAL SOCIETY
Founded: 1986; Incorporated: 1989.

The Long Island Botanical Society is dedicated to the promotion of field botany and a greater understanding of the plants that grow wild on Long Island, New York.

President	Eric Lamont
Vice President	Skip Blanchard
Treasurer	Carol Johnston
Rec'rd Sec'y	Barbara Conolly
Cor'sp Sec'y	Jane Blanchard
Local Flora	Steven Clemants
Field Trip	Glenn Richard
	Allan Lindberg
Membership	Lois Lindberg
Conservation	John Turner
	Louise Harrison
Education	Mary Laura Lamont
	Tom Stock
Hospitality	Nancy Smith
	Betty Lotowycz
Program	Skip Blanchard
	Steven Clemants
Editor	Eric Lamont

Membership

Membership is open to all, and we welcome new members. Annual dues are $10. For membership, make your check payable to LONG ISLAND BOTANICAL SOCIETY and mail to: Lois Lindberg, Membership Chairperson, 45 Sandy Hill Road, Oyster Bay, NY 11771-3111

PROGRAMS

9 January 1996 - 7:30 pm*, **Member's Night**
Muttontown Preserve Nature Center, East Norwich; Show some of your favorite botany-related slides. Call **Steve Clemants** at 718-941-4044 x 234 if you plan to bring slides.

13 February 1996 - 7:30 pm*, **Lois Lindberg,** "Wildflowers - Legends & Lore;" Muttontown Preserve Nature Center, East Norwich; This program will relate stories behind the names & uses of some of our common plants. The program will feature slides of well-known photographer & naturalist **Adrian Dignam.**

*Refreshments & informal talk begin at 7:30pm, the meeting starts at 8pm. For directions to Muttontown Preserve call 516-571-8500.

LONG ISLAND BOTANICAL SOCIETY
c/o Muttontown Preserve
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East Norwich, New York 11732